

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A discharge circuit for a pulsed gas laser system, comprising:

a pair of electrodes wherein an area between said pair of electrodes defines a gas discharge area;

a capacitor and a load in series and coupled to a first electrode of said pair of electrodes such that the load is disposed between the capacitor and the first electrode;

a high voltage pulsed generator coupled to said capacitor, wherein the capacitor operates to receive a charge from the high voltage pulsed generator and to store the charge, and to then apply the charge to the first electrode where it is discharged through the electrodes, and the load operates to dissipate energy transmitted through it as a result of a discharge in the gas discharge area; and

a cooling unit and said load is provided in said cooling unit.

2. (original) The circuit of claim 1 wherein said load includes a resistor.

3. (previously presented) The circuit of claim 2 wherein said resistor has a value comparable to a wave impedance of a gas discharge electrical loop.

4. (original) The circuit of claim 2 wherein said resistor has a value comparable to an active impedance of the gas discharge during a maximum discharge current phase.

Claim 5. (canceled)

6. (previously presented) The circuit of claim 5 wherein said cooling unit is provided in a pulsed power module of the laser system, and wherein the pulsed power module contains the high voltage pulsed generator.

7. (original) The circuit of claim 5 wherein said cooling unit includes one of an air fan and an encapsulated volume with circulating oil.

Claim 8. (canceled)

9. (previously presented) The circuit of claim 1 wherein said gas discharge area is configured to provide ionization of a laser gas during the charging of said capacitance.

10. (previously presented) The circuit of claim 1 wherein said capacitor includes a peaking capacitor.

11. (previously presented) The circuit of claim 1 wherein said pair of electrodes, said capacitor and said load form an electrical loop.

12. (original) The circuit of claim 1 wherein said load includes an active load.

Claims 13–14. (canceled)

15. (previously presented) The circuit of claim 1 further including a ground terminal coupled to said capacitor.

16. (currently amended) A discharge circuit, comprising:

a pair of discharge electrodes, a region between said pair of electrodes defining a gas discharge region;

a peaking capacitor and a resistor in series, wherein the peaking capacitor and the resistor are coupled to a first discharge electrode of the pair of electrodes, and the resistor is disposed between the first electrode and the capacitor;

a high voltage pulse generator coupled to the peaking capacitor, wherein the peaking capacitor operates to store a charge received from the high voltage pulse generator which is then discharged through the discharge electrodes, and said resistor

configured to dissipate energy transmitted through it as a result of a discharge in the gas discharge region; and

a ground terminal coupled to said peaking capacitor and a second electrode of said pair of discharge electrodes;

wherein said pair of discharge electrodes, said peaking capacitor and said resistor form an electrical loop; and

a cooling unit for cooling said resistor.

Claims 17-18. (canceled)

19. (original) The circuit of claim 16 wherein said gas discharge area includes high pressure laser gas.

Claim 20. (canceled)

21. (currently amended) A discharge circuit for use in a laser system, comprising:
a pair of discharge electrodes, an area between said pair of electrodes defining a gas discharge area;

a first peaking ~~capacitance~~ capacitor coupled between a first electrode of the pair of discharge electrodes and a ground terminal said first peaking ~~capacitance~~ capacitor configured to store a charge;

a second peaking ~~capacitance~~ capacitor, different from said first peaking ~~capacitance~~ capacitor, and a resistor in series, and the second peaking capacitor and the resistor coupled between the first electrode and the ground terminal, and wherein the resistor is disposed between the first electrode and said second capacitor configured to store a charge which is discharged through the discharge electrodes, said resistor configured to dissipate energy transmitted through it as a result of a discharge in the gas discharge area; and

a high voltage pulse generator which is coupled to the second peaking capacitor to apply a voltage to the second peaking capacitor; and

a cooling unit for cooling said resistor.

Claims 22-23. (canceled)

24. (original) The circuit of claim 21 wherein said gas discharge area includes high pressure laser gas.

Claims 25-38. (canceled)

39. (currently amended) An excimer or molecular fluorine laser, comprising:
- a discharge chamber filled with a gas mixture including a halogen component, the discharge chamber also including a pair of main discharge electrodes;
- a pulsed discharge circuit coupled to the pair of main discharge electrodes;
- wherein the pulsed discharge circuit includes:
- a main storage capacitor coupled to a pulse compression circuit;
- a peaking capacitor and a resistive component in series, and wherein the peaking capacitor and the resistive component are coupled to a first discharge electrode of the pair of main discharge electrodes, such that resistive component is disposed between the peaking capacitor and the first discharge electrode;
- wherein an output of the pulse compression circuit is coupled to the peaking capacitor such that a charge is transferred from the pulse compression circuit and then stored in the peaking capacitor and then discharged in the main discharge electrodes; **and**
- wherein the resistive component dissipates energy transmitted through it as a result of a discharge between the main discharge electrodes; **and**
- a cooling unit for cooling the resistive component; and
- wherein the peaking capacitor includes a plurality of capacitors connected to each other in parallel.
40. (previously presented) The laser of claim 39, further comprising a second peaking capacitor coupled to the pulse compression circuit and the first discharge electrode.

41. (previously presented) The laser of claim 40, wherein a first electrical connection between the peaking capacitor and the first discharge electrode has a different inherent inductance than a second electrical connection between the second peaking capacitor and the first discharge electrode.

42. (original) The laser of claim 39, wherein the resistive component includes a resistor.

43. (original) The laser of claim 39, wherein the resistive component includes a resistor and a variable inductor.

Claims 44-45. (canceled)

46. (currently amended) A method for providing an electrical pulse to discharge electrodes of an excimer or molecular fluorine laser, comprising the steps of:

charging a main storage capacitor of a pulsed gas discharge excitation laser system;

discharging an electrical charge from the main storage capacitor through a pulse compression circuit to a peaking capacitance coupled with the discharge electrodes as an electrical pulse; and

storing the electrical charge in the peaking capacitance, and then transmitting the electrical charge from the peaking capacitance to the discharge electrodes, whereby the electrical charge is discharged between the discharge electrodes;

providing a load coupled between a first electrode of the discharge electrodes, and the peaking capacitance;

dissipating an energy of an electrical pulse resulting from the transmitting of the electrical charge to the discharge electrodes in the load coupled between the peaking capacitance and the first electrode of the discharge electrodes, and

cooling the load; and

wherein the dissipation through the additional load stabilizes the current through the discharge electrodes.

47. (previously presented) The method of claim 46, wherein the discharging step includes discharging the main capacitor to the peaking capacitance and a second peaking capacitance, wherein, of the peaking capacitance and the second peaking capacitance, the load is coupled only between the peaking capacitance and the first electrode of the discharge electrodes.

Claims 48-51. (canceled)

52. (currently amended) A pulsed gas laser system, comprising:
a laser tube including a first electrode and a second electrode and laser gas; and
a capacitor and a load in series, and wherein the capacitor and load are coupled between the first electrode and ground, wherein the load is disposed between the capacitor and the first electrode;

a pulse compression circuit which is coupled to the capacitor, and operates to apply a voltage to the capacitor, and wherein the capacitor operates to store electrical energy and apply the stored electrical energy to the first electrode; and

wherein the load operates to dissipate streamers generated by a glow discharge of the laser tube which results when stored electrical energy from the capacitor is applied to the first electrode; and

a cooling apparatus which cools the load; and

wherein the capacitance and the load are located out of the laser tube.

Claim 53. (canceled)

54. (previously presented) The system of claim 52 wherein the load includes a resistor.

55. (previously presented) The system of claim 54 wherein the resistor has a value comparable to a wave impedance of a gas discharge loop.

56. (previously presented) The system of claim 54 wherein the resistor has a value comparable to an active impedance of a gas discharge during a maximum discharge current phase.

57. (previously presented) The system of claim 52 wherein the load is positioned in a pulsed power module, wherein the pulsed power module contains the pulse compression circuit.

58. (previously presented) The system of claim 52 wherein the cooling apparatus includes a first fan which is disposed outside of the laser chamber, and positioned to cool the load.

59. (previously presented) The system of claim 58 further including a second fan disposed in the laser chamber for circulating laser gas in the laser chamber.

60. (previously presented) The system of claim 52 wherein the load is encapsulated volume with circulating oil.